



## 2SD1624

## NPN SILICON TRANSISTOR

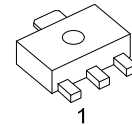
### HIGH CURRENT SWITCHING APPLICATION

#### DESCRIPTION

The UTC **2SD1624** applies to voltage regulators, relay drivers, lamp drivers, and electrical equipment.

#### FEATURES

- \* Adoption of FBET, MBIT processes
- \* Low collector-to-emitter saturation voltage
- \* Fast switching speed.
- \* Large current capacity and wide ASO



SOT-89

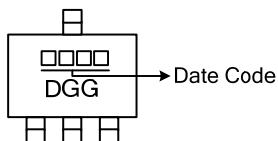
#### ORDERING INFORMATION

| Order Number     | Package | Pin Assignment |   |   | Packing   |
|------------------|---------|----------------|---|---|-----------|
|                  |         | 1              | 2 | 3 |           |
| 2SD1624G-x-AB3-R | SOT-89  | B              | C | E | Tape Reel |

Note: Pin Assignment: B: Base C: Collector E: Emitter

|                                                                                                         |                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2SD1624G-x-AB3-R</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Rank<br/>(4) Green Package</p> | <p>(1) R: Tape Reel<br/>(2) AB3: SOT-89<br/>(3) x: refer to Classification of <math>h_{FE}</math><br/>(4) G: Halogen Free and Lead Free</p> |
|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|

#### MARKING



■ **ABSOLUTE MAXIMUM RATINGS** ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                                             | SYMBOL    | RATINGS    | UNIT             |
|-------------------------------------------------------|-----------|------------|------------------|
| Collector-Base Voltage                                | $V_{CBO}$ | 60         | V                |
| Collector-Emitter Voltage                             | $V_{CEO}$ | 50         | V                |
| Emitter-Base Voltage                                  | $V_{EBO}$ | 6          | V                |
| Collector Power Dissipation( $T_c=25^\circ\text{C}$ ) | $P_C$     | 500        | mW               |
| Collector Current                                     | DC        | $I_C$      | 3                |
|                                                       | PULSE     | $I_{CP}$   | 6                |
| Junction Temperature                                  | $T_J$     | 150        | $^\circ\text{C}$ |
| Storage Temperature                                   | $T_{STG}$ | -55 ~ +150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

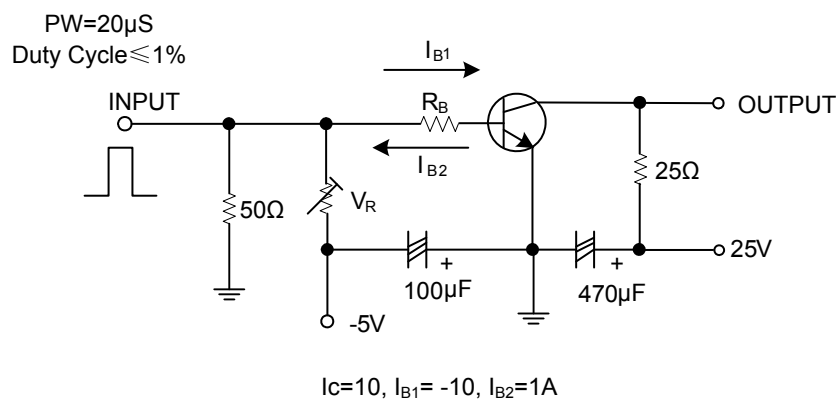
■ **ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                            | SYMBOL        | TEST CONDITIONS                         | MIN | TYP  | MAX | UNIT          |
|--------------------------------------|---------------|-----------------------------------------|-----|------|-----|---------------|
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C=10\mu\text{A}$ , $I_E=0$           | 60  |      |     | V             |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C=1\text{mA}$ , $R_{BE}=\infty$      | 50  |      |     | V             |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E=10\mu\text{A}$ , $I_C=0$           | 6   |      |     | V             |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=2\text{A}$ , $I_B=100\text{mA}$    |     | 0.19 | 0.5 | V             |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$ | $I_C=2\text{A}$ , $I_B=100\text{mA}$    |     | 0.94 | 1.2 | V             |
| Collector Cut-Off Current            | $I_{CBO}$     | $V_{CB}=40\text{V}$ , $I_E=0$           |     |      | 1   | $\mu\text{A}$ |
| Emitter Cut-Off Current              | $I_{EBO}$     | $V_{EB}=4\text{V}$ , $I_C=0$            |     |      | 1   | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=2\text{V}$ , $I_C=100\text{mA}$ | 100 |      | 560 |               |
| Gain-Bandwidth Product               | $f_T$         | $V_{CE}=10\text{V}$ , $I_C=50\text{mA}$ |     | 150  |     | MHz           |
| Output Capacitance                   | $C_{OB}$      | $V_{CE}=10\text{V}$ , $f=1\text{MHz}$   |     | 25   |     | pF            |
| Turn-ON Time                         | $t_{ON}$      | See test circuit                        |     | 70   |     | ns            |
| Storage Time                         | $t_{STG}$     | See test circuit                        |     | 650  |     | ns            |
| Fall Time                            | $t_F$         | See test circuit                        |     | 35   |     | ns            |

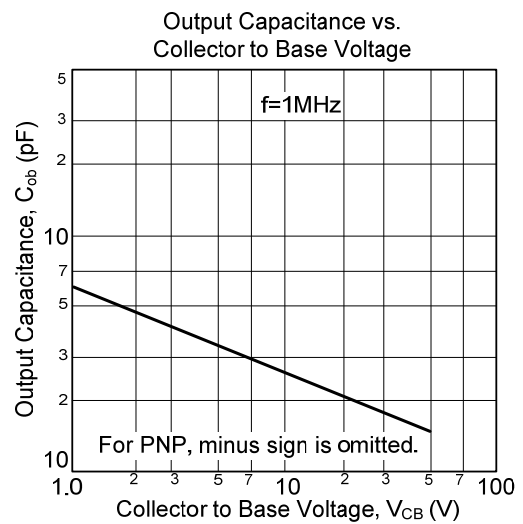
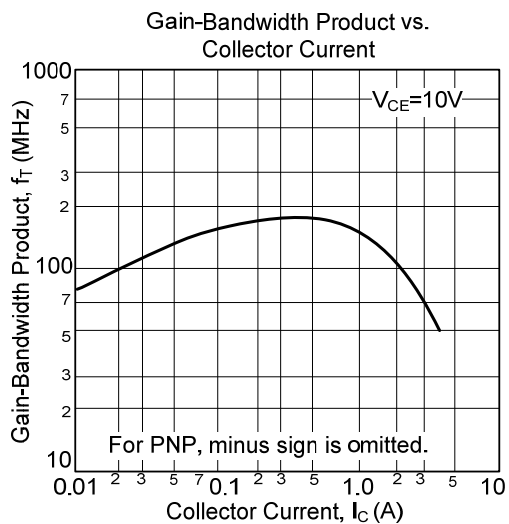
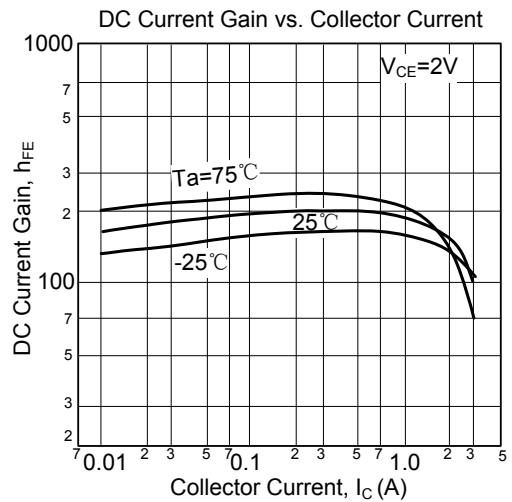
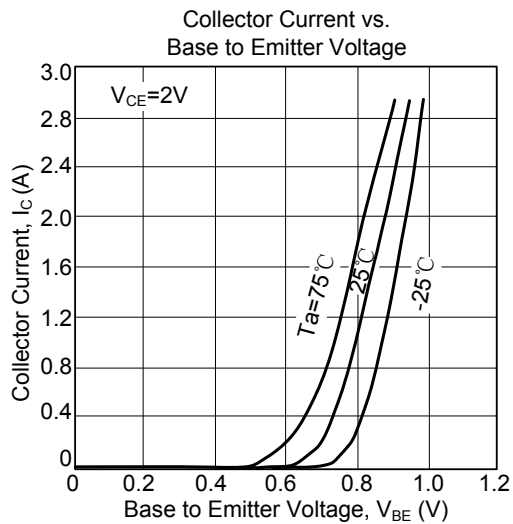
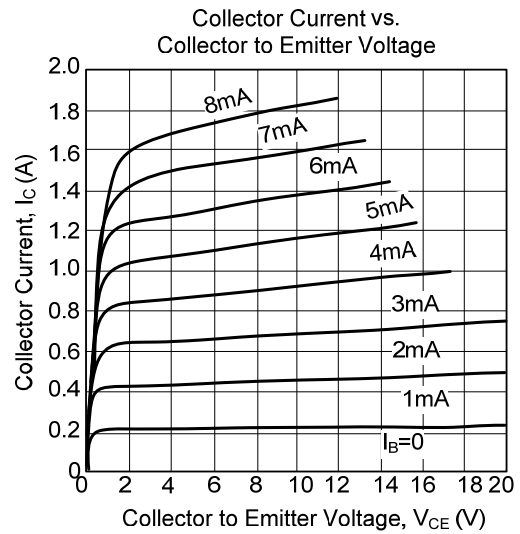
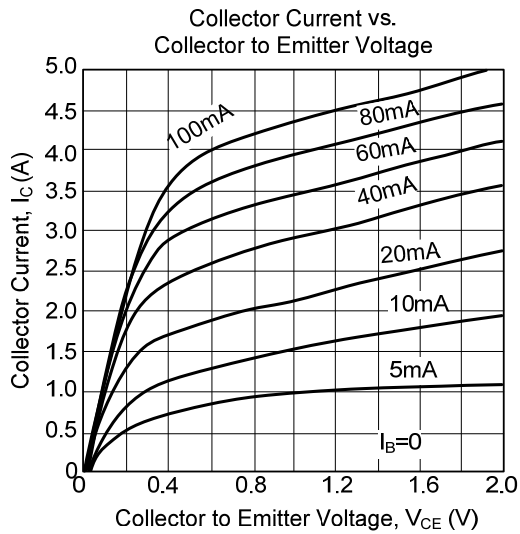
■ **CLASSIFICATION OF  $h_{FE}$**

| RANK  | R       | S       | T       | U       |
|-------|---------|---------|---------|---------|
| RANGE | 100-200 | 140-280 | 200-400 | 280-560 |

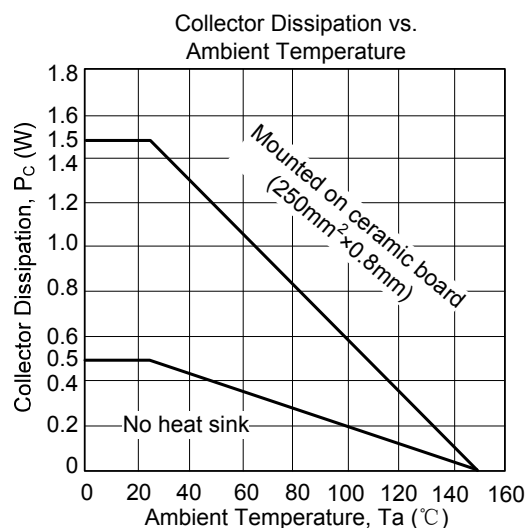
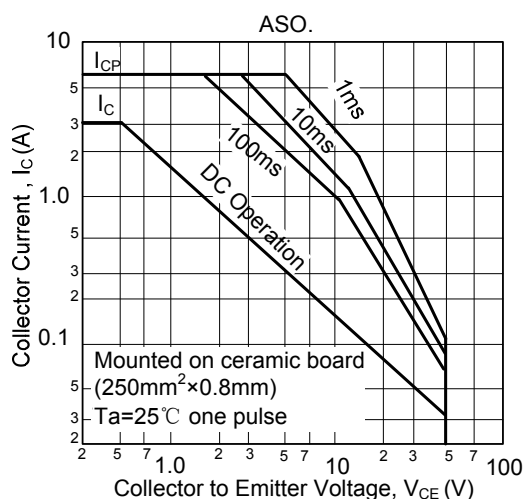
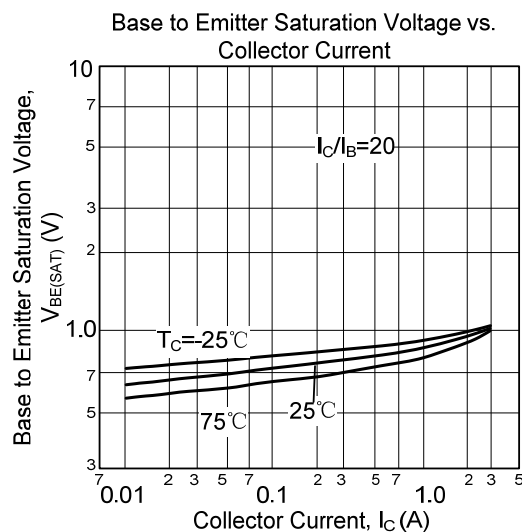
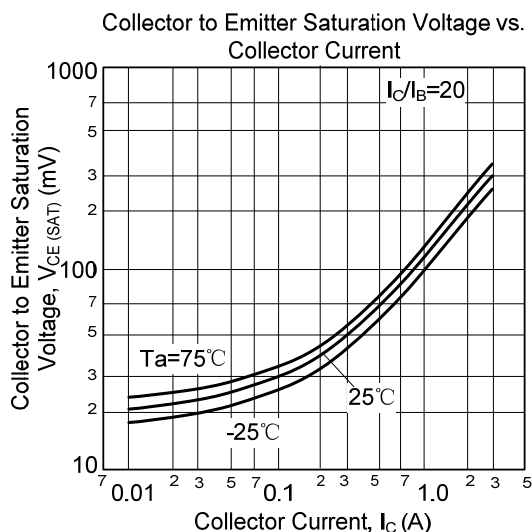
### ■ TEST CIRCUIT



## TYPICAL CHARACTERISTICS



### ■ TYPICAL CHARACTERISTICS(Cont.)



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